

SECTION 733-2.02

Pedestrian Signals is modified to add the following for LED pedestrian signals:

General Requirements:

In addition to the following provisions, the design and operation of pedestrian signals shall be in accordance with all applicable sections of the March 1985 Institute of Transportation Engineers (ITE) Standard for Pedestrian Traffic Control Signal Indications.

Materials:

The pedestrian signal shall consist of a message capable of displaying the symbols of an UPRAISED HAND (symbolizing DON'T WALK) and a WALKING PERSON (symbolizing WALK), constructed of light emitting diodes (LEDs).

The UPRAISED HAND and WALKING PERSON symbols shall be solid (filled) figures. The UPRAISED HAND symbol shall be Portland Orange. The WALKING PERSON symbol shall be Lunar White.

Each housing shall be equipped with a fuse block for two 1-amp fuses and screw type terminals for line and load side wire connections.

The LED's shall be rated for 100,000 hours of continuous operations in an operating temperature range of – 40 degrees F to +165 degrees F. The module shall be protected against dust and moisture intrusion per the requirements of NEMA Standard 250-1991 for Type 4 enclosures to protect all internal components. All pedestrian signal components shall be corrosion-resistant.

Electrical Requirements:

The operating voltage for the LED pedestrian modules shall be 60 HZ, and 120 VAC and shall function normally over a voltage range of 95 to 135 volts. The maximum power consumption for the modules is 12 watts for either the hand symbol or the man symbol. The power factor shall be 0.90 or greater and the total harmonic distortion induced into an AC line by the LED module shall not exceed 20 percent.

All LED pedestrian modules shall be equipped with on-board voltage surge protection to withstand high repetition noise transients as stated in Section 2.1.6 of the National Electrical Manufacturers Association (NEMA) Standard TS-2, 1992. All module wiring shall conform to Section 13.02 of the ITE Standard for Vehicle Traffic Control Signal Heads.

The LED modules and associated on-board circuitry shall meet the Class A emission limits referred to in the Federal Communications Commission (FCC) Title 47, Sub Part B, Section 15 regulations concerning the emission of electronic noise.

Photometric Requirements:

Each LED pedestrian module shall provide an average luminous intensity of at least 3,750 candela per meter squared for the UPRAISED HAND symbol and 5,300 candela per meter squared for the WALKING PERSON symbol. These levels must be maintained throughout the 48-month minimum life of the module in all temperature ranges.

The uniformity ratio of an illuminated symbol shall not exceed 4 to 1, between the highest luminance area and the lowest luminance area in the module. The color output of the module shall conform to the requirements of Section 5.3 in the ITE Standard for Vehicle Traffic Control Signal Heads.

Construction Requirements:

The contractor shall install and test each pedestrian unit for accuracy with a qualified traffic signal representative to verify operation before the signal turn-on. The assembly of the pedestrian signal shall be designed to assure all components are adequately supported and protected to withstand mechanical shock, vibration from high winds and other sources, and vandalism.

All pedestrian signal systems must satisfy the requirements of this specification in order to be approved and used on ADOT traffic signal systems. In addition, all systems must perform acceptably under actual field conditions ranging from high altitude, cold winter conditions to low altitude, high temperature desert exposure to be accepted. If, at any time, the product performs unsatisfactorily under actual field conditions, or does not conform to the requirements of this specification, the product will not be approved for use by ADOT. The contractor shall provide ADOT a written minimum four-year product warranty from the manufacturer. This is equal to the minimum warranty time provided for standard neon type pedestrian modules.

Method of Measurement:

Method of measurement for LED pedestrian signals shall be measured as a unit of each. This includes the signal housing and the module.

Basis of Payment:

The accepted quantities of pedestrian signal with LED modules will be paid for at the contract unit price each complete and in place and tested. This shall be full compensation for the work described and specified.

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